We claim:

1. A method for estimating the frequency offset in an OFDM communication system, comprising the steps of:

allocating certain locations in an interleaver to a signature sequence;

transmitting said signature sequence with data to a receiver; and

estimating the frequency offset at said receiver by determining whether a correlated peak associated with said signature sequence is in an expected location.

2. The method of claim 1, wherein said signature sequence is stored in the last column of a block interleaver.

3. The method of claim 1, wherein said signature sequence is transmitted over a number of bins in upper and lower side bands of the digital signal.

4. The method of claim 1, further comprising the step of correcting said estimated frequency offset using feedback techniques.

5. The method of claim 1, further comprising the step of correcting said estimated frequency offset using forward error correction techniques.

6. The method of claim 1, wherein said signature sequence is transmitted every L data frames on each side band, where L is generally the number of OFDM frames that can fill the interleaver memory.

7. The method of claim 1, wherein said signature sequence is transmitted every time an interleaver memory is full.

8. The method of claim 1, further comprising the step of delaying the transmission of said signature sequence on one side band from the other side band.

9. The method of claim 1, further comprising the step of maintaining said signature sequence in the center of a search window.

10. The method of claim 1, wherein the signature sequence is a Barker sequence.

11. The method of claim 1, wherein the signature sequence is a Barker sequence with a very low side-lobe.

12. A method for estimating the frequency offset in an OFDM communication system, comprising the steps of:

receiving a digital signal, wherein said received contains a signature sequence in an expected location;

correlating said received digital signal using a filter matched to said signature sequence; and

identifying whether a correlated peak associated with said received digital signal is an expected location.

13. The method of claim 12, wherein said signature sequence is stored by a transmitter in the last column of a block interleaver.

14. The method of claim 12, wherein said signature sequence is received over a number of bins in upper and lower side bands of the digital signal.

15. The method of claim 12, further comprising the step of correcting said estimated frequency offset using feedback techniques.

16. The method of claim 12, further comprising the step of correcting said estimated frequency offset using forward error correction techniques.

17. The method of claim 12, wherein said signature sequence is received every L data frames on each side band, where L is generally the number of OFDM frames that can fill an interleaver memory.

18. The method of claim 12, wherein said signature sequence is received every time a de-interleaver memory is full.

19. The method of claim 12, wherein the signature sequence on one side band is delayed from the other side band.

20. The method of claim 12, further comprising the step of maintaining said signature sequence in the center of a search window.

21. The method of claim 12, wherein the signature sequence is a Barker sequence with a very low side-lobe.

22. A method for synchronizing interleavers in an OFDM communication system, comprising the steps of:

allocating certain locations in an interleaver to a signature sequence;

transmitting said signature sequence with data to a receiver; and

identifying a beginning of an interleaver block based on a location of a correlated peak associated with said signature sequence.

23. The method of claim 22, wherein said signature sequence is stored in the last column of a block interleaver.

24. The method of claim 22, wherein said signature sequence is transmitted over a number of predefined bins in both the upper and lower sides of the digital signal.

25. The method of claim 22, wherein said signature sequence is received every L data frames on each side band, where L is generally the number of OFDM frames that can fill an interleaver memory.

26. The method of claim 22, wherein said signature sequence is transmitted every time an interleaver memory is full.

27. The method of claim 22, further comprising the step of delaying the transmission of said signature sequence on one side band from the other side band.

28. The method of claim 22, wherein the signature sequence is a Barker sequence with a very low side-lobe.

29. A receiver in an OFDM communication system for receiving a digital signal containing a signature sequence in an expected location, comprising:

a filter matched to said signature sequence for correlating said received digital signal; and

a frequency offset estimator that identifies whether a correlated peak associated with said received digital signal is an expected location.

30. A receiver in an OFDM communication system, comprising:

means for receiving a digital signal having a signature sequence in certain locations;

a filter matched to said signature sequence for correlating said received digital signal; and

an interleaver synchronizer that identifies a beginning of an interleaver block based on a location of a correlated peak associated with said signature sequence.